FEB 2 1995

TWIN STATE ENVIRONMENTAL CORP.

P.O. Box 719, Commercial Park, 1A Huntington Road, Richmond, VT 05477
Tel.: (802) 434-3350 • Fax (802) 434-4478

January 31, 1995

Mr. Richard Spiese
Sites Management Section
Agency of Natural Resources
103 South Main Street
Waterbury, VT 05671-0404

RE: Essex Shopping Plaza
SMS Site No. 94-1612
TSEC Project No. 94-123

Dear Richard:

Attached please find one copy of a Limited Site Investigation Report for the above referenced site.

If you have any questions or wish to discuss the findings of this investigation, please do not hesitate to contact me. I can be reached at (802) 434-3350.

Sincerely,

TWIN STATE ENVIRONMENTAL CORPORATION

Jennifer von Rohr
Project Manager

attachment

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P.O. Box 719, Commercial Park, 1A Huntington Road, Richmond, VT 05477
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Phase (check one)	Type (check one)
☒ Initial Site Investigation	☐ Work Scope
☐ Corrective Action feasibility Investigation	☒ Technical Report
☐ Corrective Action Plan	☐ PCF Reimbursement Request
☐ Corrective Action Plan	☐ General Correspondence
☐ Operations & Monitoring Report	

INITIAL SITE INVESTIGATION

January 31, 1995

Essex Shopping Plaza
Pearl Street
Essex Junction, Vermont

SMS Site #94-1612

TSEC #94-123

Facility Owned By:
Hauke Building Supply
1099 North Avenue
Burlington, Vermont 05401
(802) 658-6688
Contact: David Hauke

Written By:

Jennifer von Rohr
Project Manager

Reviewed By:

John R. Diego
Vice President

1.0 EXECUTIVE SUMMARY

The following report has been prepared by Twin State Environmental Corporation (TSEC) to present the results of a Site Investigation conducted at the Essex Shopping Plaza located on Route 15 in the Village of Essex Junction, Vermont (Figure 1). This site investigation was conducted at the request of the State of Vermont, Agency of Natural Resources, Sites Management Section (SMS), following the discovery of fuel oil contamination in soils below one former underground storage tank. This former UST was one of 11 tanks excavated from this area of the Essex Shopping Plaza property in May 1994. Conditions encountered at the time of the UST removal activities were reported to the SMS on May 17, 1994 by TSEC.

The portion of this property which was the subject of subsurface investigation is limited to the area illustrated on the Site Plan provided as Figure 2. This area is located on the rear portion (i.e. north side) of the Essex Shopping Plaza building, adjacent to the Champlain Valley Exposition Fairgrounds. Surrounding properties include numerous commercial establishments, including retail shops and a gasoline station. This site and surrounding area is designated by the Village of Essex Junction as a Heavy Commercial District. Figure 3 of this report illustrates the size, location and orientation of this site and nearby properties.

The activities conducted for this Site Investigation were proposed in TSEC's work plan of November 3, 1994. As proposed, project tasks include: the drilling and installation of three (3) soil borings/monitoring wells, screening of subsurface soils for contamination, sampling groundwater for data and analysis; and evaluating the potential for risk of contamination to impact nearby receptors.

As demonstrated throughout the presentation of this report, TSEC consistently found soil and groundwater in the investigated area to be virtually free from evidence of petroleum contamination. This is documented through the results of field screening of soils and the analysis of groundwater. Additional results of this project indicate the area surrounding the investigated location to be free from potential receptors.

Based on the relative absence of petroleum contamination in the investigated area of this site and a lack of sensitive receptors in the surrounding area, TSEC proposes that no additional activities be conducted at this location. Furthermore, TSEC believes that this report demonstrates that this site complies with the conditions necessary for a Site Management Activity Completed (SMAC) designation as outlined in the Hazardous Materials Management Division's draft "Site Management Activity Completed" Classification Procedure document of December 13, 1993. It is therefore, requested that the SMS consider this site for a SMAC designation.

2.0 Introduction

This report has been prepared by Twin State Environmental Corporation (TSEC) to report the results of a site investigation conducted at the Essex Shopping Plaza located on Pearl Street (also known as Route 15) in the Village of Essex Junction, Vermont (Figure 1). This investigation was conducted at the request of the State of Vermont, Agency of Natural Resources, Sites Management Section (SMS), in response to fuel oil contamination which was encountered at this site during May 1994 underground storage tank (UST) removal activities.

As reported to the SMS in TSEC's tank removal report for this site dated May 17, 1994, a total of 11 USTs previously used for the storage of fuel oil for on-site heating purposes, were removed from the north side of the site building on May 12, 1994. With the exception of one excavation (the former location of UST-4) all of the former tank locations were found to be free from evidence of fuel oil contamination. The excavation of UST-4, however, was found to contain a small area of soil staining which yielded a photoionization detector (PID) reading of 18 parts per million.

In order to provide for the later evaluation of groundwater in the vicinity of the former UST-4 location, TSEC installed one monitoring well in the backfill of this excavation. Later attempts by TSEC to sample this well, however, proved futile, as this well was found to be damaged. Accordingly, this well has since been discontinued from service.

The activities conducted for this site investigation were proposed by TSEC in a work plan dated November 3, 1994. Approval for reimbursement of the activities proposed by TSEC under the Vermont Petroleum Clean-up Fund (PCF) was issued by the SMS in letters dated November 8 and December 19, 1994. Specific activities which were conducted for this project are summarized throughout Section 5.0 of this report.

3.0 Site Description

The portion of this property which is the subject of this site investigation is limited to the area north of the Essex Shopping Plaza building, in the vicinity of the former "Fays" Drug store, now known as Knight's Pharmacy. As illustrated by Figure 2, site features are essentially limited to the north wall of the Essex Shopping Plaza building, a paved driveway/parking area, a chain link fence and several utility accessories including one telephone pole. This area is primarily used for employee parking and the unloading of delivery vehicles.

The Essex Shopping Plaza property, as well as surrounding properties consist of numerous commercial establishments including retail stores and a gasoline station. This area is designated by the Village of Essex Junction Zoning Board as a Heavy Commercial district. Located to the immediate north, east and west of the site is the Champlain Valley Exposition Fair Grounds. Pearl Street is the adjacent property located to the south of this

site. Figure 3 has been provided to illustrate the relative size, location and orientation of the Essex Shopping Plaza and surrounding properties. The names of tax payers who own property in the immediate vicinity of the Essex Shopping Plaza site are summarized on Table 1.

4.0 Site History

Based on a review of records available through the Town of Essex, the Essex Shopping Plaza property was purchased by Antonio B. Pomerleau from the Champlain Valley Exposition, Inc. in May of 1957. The property was then sold to William R. and Roland J. Hauke in September 1957. This property is currently owned by William R. Hauke, Roland J. Hauke and Bruce Venner, doing business as Hauke Building Supply.

Based on the prior ownership, it is assumed that this property was previously part of the current Champlain Valley Fair Grounds. The existing building was built by the current owners in approximately 1964.

5.0 Summary of Project Activities

5.1 Drilling Program

In order to evaluate subsurface soils and groundwater associated with this site, TSEC conducted a drilling program which included the installation of three monitoring wells. These wells, which are identified on Figure 2 as MW-2, MW-3 and MW-4 (note that the aforementioned well which was installed in the backfill at this location was designated as MW-1) were all installed to approximate depths of 13 feet below grade.

Drilling was conducted on January 3, 1995 by Tri State Drilling and Boring of East Burke, Vermont under the observation of a TSEC geologist. A hollow stem auger drilling rig equipped with "split spoon" samplers was used to conduct the drilling and boring activities.

As described in the Monitoring Well/Soil Boring Logs provided in Attachment 1, soils encountered throughout each borehole were classified by TSEC as consisting primarily of fine to medium SAND. Screening of these soils for the presence of contamination was also conducted by TSEC. Through the combined use of visual observations and a photoinoization detector (PID) calibrated to isobutylene, no indication of petroleum contamination was encountered in soils evaluated from each borehole. Soil samples, therefore were not collected for laboratory analysis.

As indicated by the Monitoring Well/Soil Boring Logs provided as Attachment 1, each well is constructed of 2 inch diameter 10 slot PVC screen, PVC riser and

flush mounted aluminum guards. The screen in each well was placed in the subsurface interval of approximately 3' to 13' below the ground surface.

Following drilling at each location, a well was installed and later developed to remove drilling fluids or other materials which may have entered the well. Well development was conducted for a period of approximately 30 minutes at each location with the use of a peristaltic pump. Development water was discharged directly to the ground surface.

5.2 Groundwater Evaluation

TSEC conducted groundwater sampling activities at this location on January 11, 1995 for the collection of data and samples for analysis. Wells which were sampled include MW-2, MW-3 and MW-4. An evaluation of MW-1 indicated that this well was damaged at the interface of the screen and riser. MW-1, therefore was not included in this sampling event.

Sampling of each well was conducted in accordance with TSEC's standard operating procedures for well sampling. These procedures include the collection of water elevation data, purging a minimum of three well volumes from each well, and collecting samples for analysis with the use of a disposable Teflon bailer. All purge water removed from these wells were discharged directly to the ground surface.

As a result of data collected from this groundwater sampling episode, it was determined that the depth to groundwater in the vicinity of the investigated area is approximately 6.5 feet. Furthermore, it appears that groundwater in the immediate vicinity of this site flows from south to north. It is, however, noted that this flow determination is based on the monitoring of a small area which is likely to be influenced by site improvements, and therefore, may not accurately represent the flow of groundwater in this general area. An interpretation of the groundwater elevation data is presented as a groundwater contour map on Figure 4, and the water level data is summarized on Table 2.

Samples from each well were submitted to ChemServe Environmental Analysts of Milford, New Hampshire for the analysis of Volatile Aromatic Compounds by USEPA Method 8020 and Total Petroleum Hydrocarbons by USEPA Method 8100. In addition, quality assurance/quality control (QA/QC) samples, including one duplicate sample from MW-4 (identified as MW-4D) and a trip blank, were also collected for analysis.

The analytical results from this groundwater sampling effort are summarized on Table 3 of this report. As indicated the results of the samples analyzed did not

show detectable levels of Benzene, Toluene, Ethylbenzene and total Xylenes compounds above the detection limit of 1 microgram/liter (ug/l).

The analytical results of the sample collected from MW-2 was reported to contain 1 milligram/liter (mg/l) total Petroleum Hydrocarbons. Analytical results of samples collected from MW-3 and MW-4 were reported to contain no Total Petroleum Hydrocarbons above the method detection limit of 0.1 mg/l (i.e. noted as BDL on the laboratory report). Note that currently no enforcement level exists for this parameter in groundwater.

As illustrated by Figure 4, MW-2 is situated directly downgradient from the former UST-4 location.

5.3 Potential Receptor Survey

Prior to TSEC's determination that significant contamination is not associated with the investigated portion of this site, a search was conducted to identify nearby potential receptors. As proposed, this task included the review of available maps and well records of the area which surrounds the Essex Shopping Plaza location.

As a result of this survey, no potential receptors were identified in the area surrounding this site. Specifically, within a 0.5 mile radius of the Essex Shopping Plaza site: no public or private drinking water supply wells are on record with the Vermont Water Supply Division; no surface water has been identified; and, no subsurface structures (i.e. basements) appear to be present.

6.0 Summary and Recommendations

As demonstrated throughout this report, TSEC has investigated the subsurface area of one former UST previously associated with the Essex Shopping Plaza for the presence of petroleum contamination. As a result, only a minimal amount of contamination was identified in one monitoring well (MW-2), which is located adjacent to and hydraulically downgradient from the former UST location. No evidence of soil contamination was identified in the areas investigated for this project.

In addition to the virtual absence of site contamination, this site investigation revealed the absence of potential receptors within a 0.5 mile radius of this site. The combination of these factors precludes concern for contamination which could have resulted from the former UST-4 which previously existed at this location.

Accordingly, TSEC does not recommend further investigative or monitoring activities be conducted at this location. TSEC believes that the data and information contained in this report demonstrates that this site complies with the conditions necessary for a Site Management Activity Completed (SMAC) designation as outlined in the Hazardous

Materials Management Division's draft "Site Management Activity Completed" Classification Procedure document of December 13, 1993. TSEC, therefore, recommends that the SMS consider this site for a SMAC designation.

Table 1

Summary of Surrounding Property Owners
Essex Shopping Plaza

Lot Number	Owner	Mailing Address
55	Hauke Building Supply	P.O. Box 1099, Burlington, VT
55-1	Champlain Oil Co.	45 San Remo Drive, S. Burlington, VT
54	Champlain Valley Exposition, Inc.	Fairgrounds, Essex Jct, VT
57	Hauke Building Supply	P.O. Box 1099 Burlington, VT
1	Essex Realty Co	76 Pearl Street, Essex Jct, VT
1-2	Painsville Realty Trust	P.O. Box 203 Essex Jct, VT
1-1	Vermont National Bank	84 Pearl Street, Essex Jct, VT
8	Brian R. & Christine A. Consentino	86 Pearl Street, Essex Jct, VT
9	George P. & Virginia Hanker & Danny Ladoucer	90 Pearl Street, Essex Jct, VT
10	George P. & Virginia Hanker & Danny Ladoucer	90 Pearl Street, Essex Jct, VT
11	Elizabeth E. Cota Culver	P.o. Box 518, Essex Jct, VT
12	Frank Lussier, George Nostrant	Main Street, Montpelier, VT
13	Champlain Valley Railway	St. Albans, VT
14	Margaroy Trust	P.O. Box 545 Williston, VT

Notes:

- Lot numbers correspond to Town of Essex Tax Map Number 35, which has been reproduced and presented as Figure 3 of this report.
- Information summarized above was obtained from the Town of Essex Assessor's Office.

Table 2

Summary of Water Elevation Data

Essex Shopping Plaza
January 11, 1995

Well Identification	TOC Elevation	Depth to Water	Water Elevation
MW-2	95.62	6.95	88.67
MW-3	96.49	6.95	89.54
MW-4	95.32	6.63	88.69

NOTES:

MW-1 was found to be damaged and therefore has been removed from service.
Well locations are identified on Figures 2 and 4.
This data has been used to generate the groundwate contour map provided as Figure 4.
All water elevation and survey data collected by TSEC.

Table 3
Summary of Analytical Results
Groundwater Sampling

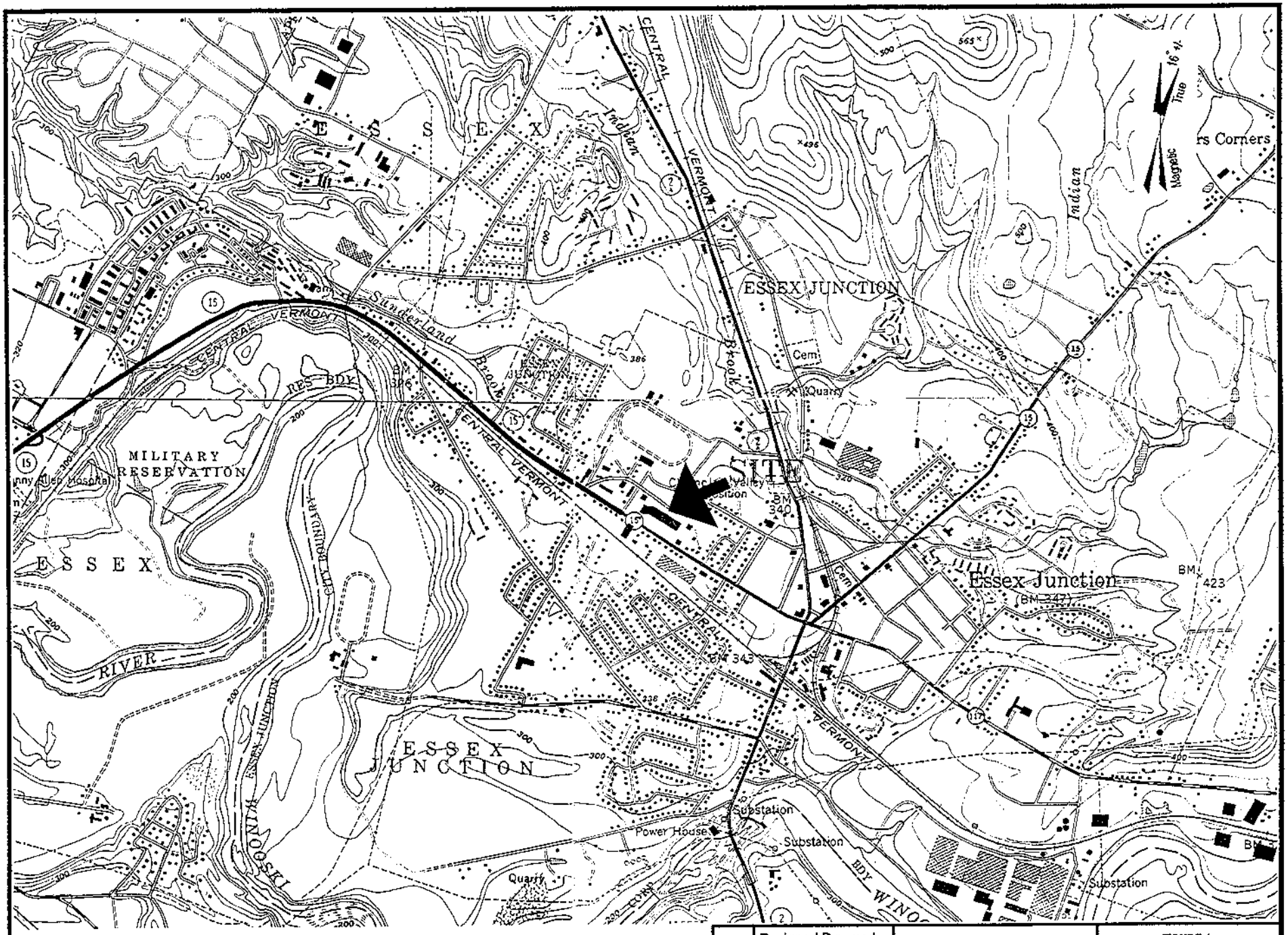
Essex Shopping Plaza
January 11, 1995

Sample Identification	Total BTEX		Total Petroleum Hydrocarbons	
	Results (ug/l)	Det.Limit (ug/l)	Results (mg/l)	Det.Limit (mg/l)
MW-2	ND	1	1	0.1
MW-3	ND	1	ND	0.1
MW-4	ND	1	ND	0.1
MW-4D	ND	1	ND	0.1
Trip Blank	ND	1	NA	---

NOTES:

Det. Limit Indicates method detection limit achieved by the laboratory.
ND Indicates Parameter was not detected above method detection limit.
NA Indicates sample was not analyzed for indicated parameter.
MW-4D Represents a duplicate sample collected from MW-4.

- Total BTEX results indicate the total of Benzene, Toluene, Ethylbenzene and total Xylenes Compounds as determined by USEPA Method 8020.
- Total Petroleum Hydrocarbons determined by USEPA Method 8100.
- All samples collected by TSEC on January 11, 1995.
- All analysis conducted by ChemServe Environmental Analysts.
- Well locations are identified on Figures 2 and 4 of this report.
- The laboratory report which corresponds to this summary is provided as Attachment 2.

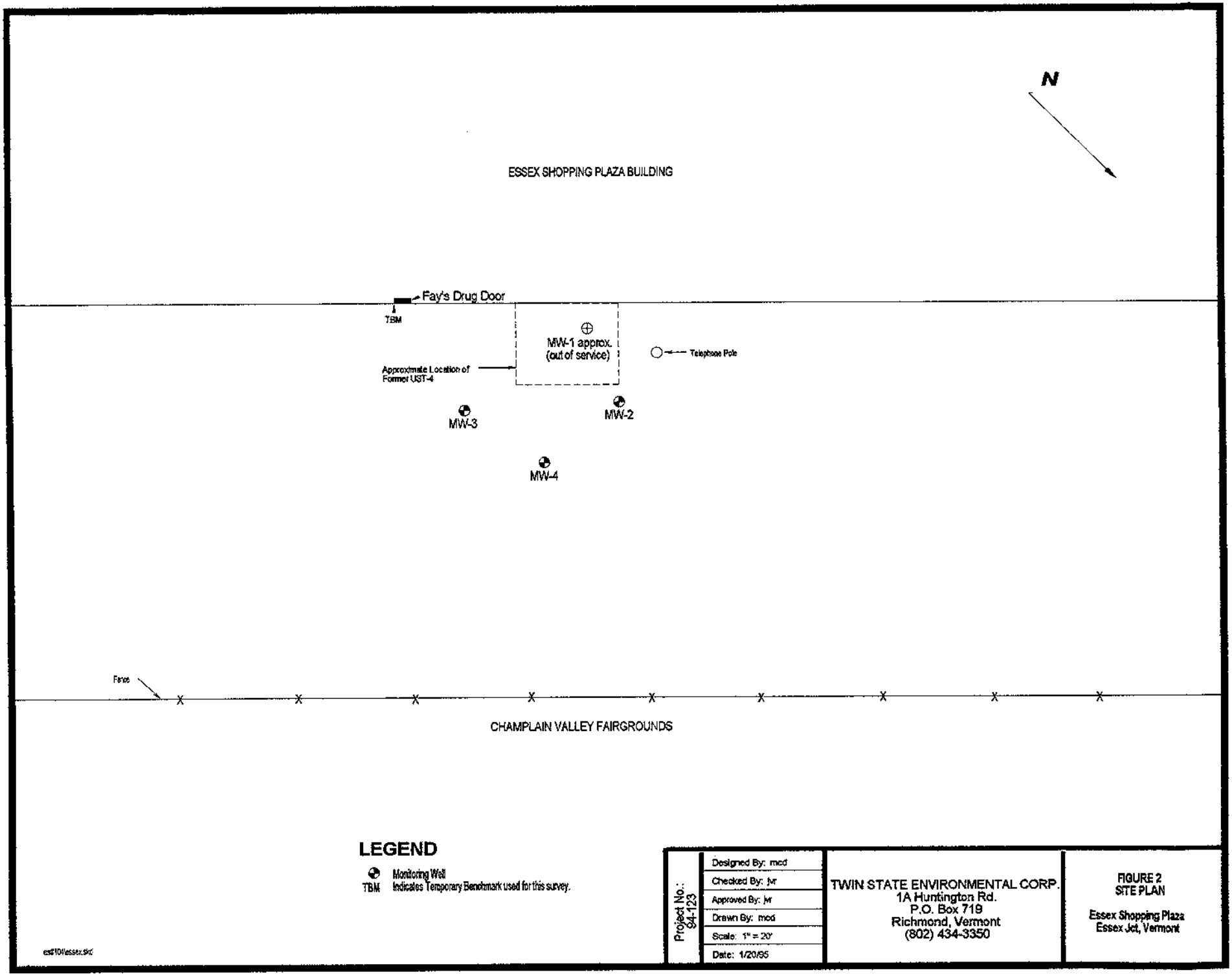


Project No: 94-123	
Designed By: mcd	
Checked By: jvr	
Approved By: jvr	
Drawn By: mcd	
Scale: 1 : 24,000	
Date: 1/25/95	

TWIN STATE ENVIRONMENTAL CORP.
1A Huntington Rd.
P.O. Box 719
Richmond, Vermont
(802) 434-3350

FIGURE 1
SITE LOCATION MAP

Essex Shopping Plaza
Essex Junction, Vermont



LEGEND

Monitoring Well

TBM Indicates Temporary Benchmark used for this survey.

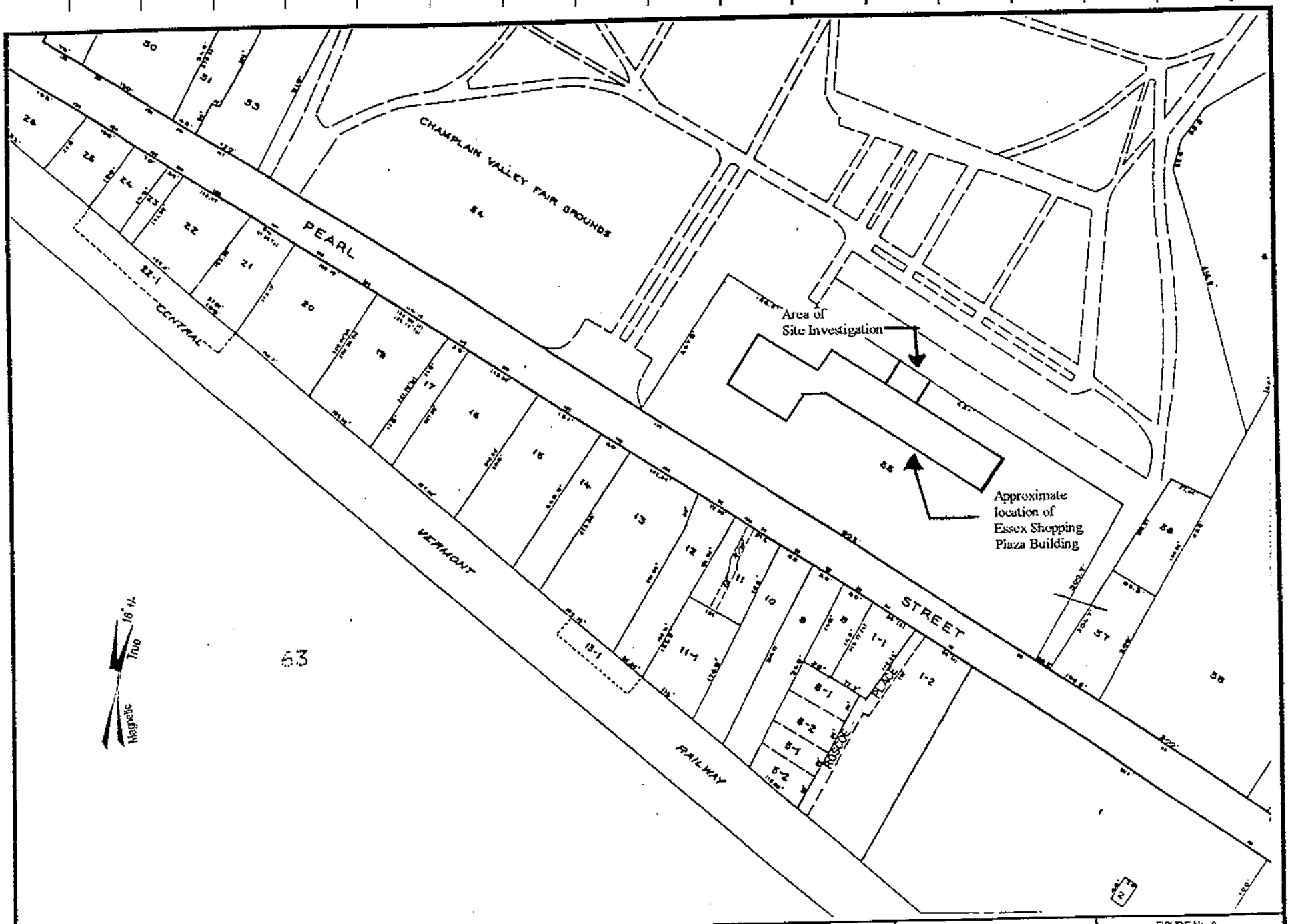
Project No.: 94-123	
	Designed By: mcd
	Checked By: jvr
	Approved By: jvr
	Drawn By: mcd
	Scale: 1" = 20'
	Date: 1/20/95

TWIN STATE ENVIRONMENTAL CORP.
1A Huntington Rd.
P.O. Box 719
Richmond, Vermont
(802) 434-3350

FIGURE 2
SITE PLAN

Essex Shopping Plaza
Essex Jct, Vermont

est104essex.skc

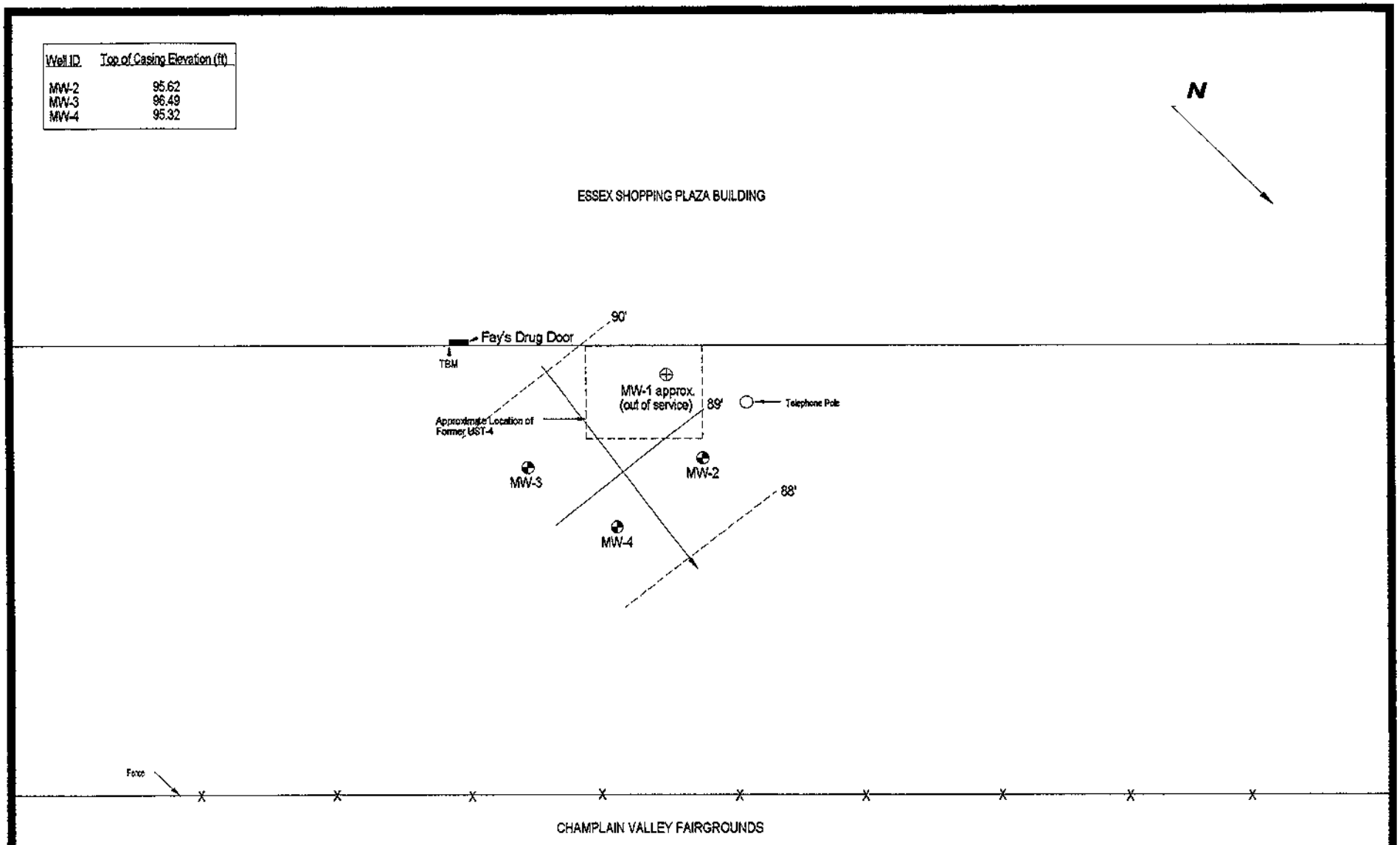


NOTES: 55 - indicates block number
Taken from Town of Essex Tax Map Number 35

mcdb:\104\esx3

Project No: 94-123	Designed By: JVR Checked By: MCD Approved By: JVR Source: Town of Essex Scale: +/- 1"=100' Date: January 25, 1995	TWIN STATE ENVIRONMENTAL CORP. 1A Huntington Rd. P.O. Box 719 Richmond, Vermont (802) 434-3356	FIGURE No. 3 Property Boundary Map Essex Shopping Plaza Pearl Street Essex Junction, Vermont

Well ID	Top of Casing Elevation (ft)
MW-2	95.62
MW-3	96.49
MW-4	95.32



LEGEND

- Monitoring Well
- TBM Indicates Temporary Benchmark used for this survey.
- 89' Groundwater Contour Line
- 88' Inferred Groundwater Contour Line
- Groundwater Flow Direction

Project No.: 94-123	
	Designed By: mcd
	Checked By: jvr
	Approved By: jvr
	Drawn By: mcd
	Scale: 1" = 20'
	Date: 1/20/95

TWIN STATE ENVIRONMENTAL CORP.
1A Huntington Rd.
P.O. Box 719
Richmond, Vermont
(802) 434-3350

FIGURE 4
GROUNDWATER CONTOUR MAP

Essex Shopping Plaza
Essex Jct, Vermont

ass104essex.dgn

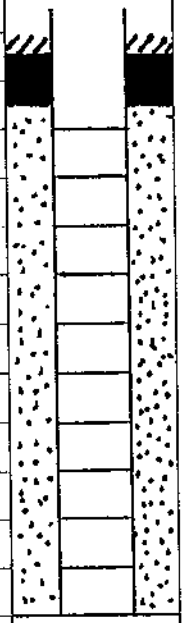
ATTACHMENT 1

MONITORING WELL/SOIL BORING LOGS

TWIN STATE ENVIRONMENTAL CORP.

MONITORING WELL/SOIL BORING LOG

WELL/BORING NO.: MW-2	DEPTH OF WELL: 13 ft DEPTH OF BORING: 13 ft
PROJECT NAME: Essex Shopping Plaza	DEPTH TO WATER: 6.80 ft
PROJECT NO.: 94-123	SCREEN DIA.: 2 in. DEPTH: 13 - 3 ft
INSTALL DATE: 1/3/95	SCREEN TYPE/SIZE: Sched. 40 PVC, 0.010 in. mach. slot
TSEC REP.: mcd	RISER TYPE: Sched 40 PVC
DRILLING CO.: Tri-State Drilling	RISER DIA.: 2 in. DEPTH: 3 to 0.5 ft
DRILLING METHOD: Hollow Stem Augers	GUARD TYPE: Aluminum Flush-mount Curb Box
SAMPLING METHOD: Split spoon	RISER CAP: Expansion Plug

DEPTH IN FEET	WELL PROFILE	SAMPLE DEPTH (FT)	PID (PPMV)	BLOWS/6" AND RECOVERY	SOIL DESCRIPTION AND NOTES
1		0 - 5	0.0	From Cuttings	0 - 0.3' ASPHALT 0.3 - 5' Brown fine SAND, little silt, trace fine-med. gravel.
2					
3					
4					
5		5 - 7	0.0	3, 5, 8, 8 (1.8')	Gray very fine SAND, some silt & iron oxide staining, wet, saturated at 6.5'.
6					
7 ▼					
8					
9					
10		10 - 12	0.0	2, 3, 3, 4 (1.3')	Brown fine SAND, little silt, trace coarse sand, saturated.
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

LEGEND

- CEMENT GROUT
- NATIVE BACKFILL
- BENTONITE SEAL
- SAND PACK
- WELL SCREEN
- RISER PIPE
- HS HEAD SPACE
- WATER LEVEL (APPROX)

GRANULAR SOILS

BLOWS/FT	DENSITY
0-4	V.LOOSE
4-10	LOOSE
10-30	M.DENSE
30-50	DENSE
>50	V.DENSE

COHESIVE SOILS

BLOWS/FT	DENSITY
<2	V.SOFT
2-4	SOFT
4-8	M.STIFF
8-15	STIFF
15-30	V.STIFF
>30	HARD

PROPORTIONS USED

TRACE	0-10%
LITTLE	10-20%
SOME	20-35%
AND	35-50%

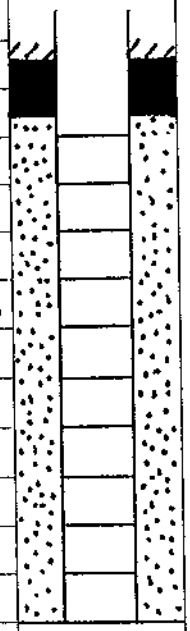
NOTES:

cas:\project\94-123\mw2.skd

TWIN STATE ENVIRONMENTAL CORP.

MONITORING WELL/SOIL BORING LOG

WELL/BORING NO.: MW-3	DEPTH OF WELL: 13 ft DEPTH OF BORING: 13 ft
PROJECT NAME: Essex Shopping Plaza	DEPTH TO WATER: 6.82 ft
PROJECT NO.: 94-123	SCREEN DIA.: 2 in. DEPTH: 13 - 3 ft
INSTALL DATE: 1/3/95	SCREEN TYPE/SIZE: Sched. 40 PVC, 0.010 in. mach. slot
TSEC REP.: mcd	RISER TYPE: Sched 40 PVC
DRILLING CO.: Tri-State Drilling	RISER DIA.: 2 in. DEPTH: 3 to 0.5 ft
DRILLING METHOD: Hollow Stem Augers	GUARD TYPE: Aluminum Flush-mount Curb Box
SAMPLING METHOD: Split spoon	RISER CAP: Expansion Plug

DEPTH IN FEET	WELL PROFILE	SAMPLE DEPTH (FT)	PID (PPMV)	BLOWS/6" AND RECOVERY	SOIL DESCRIPTION AND NOTES
1–13		0 - 5	0.0	From Cuttings	0 - 0.3' ASPHALT 0.3 - 5' Brown fine SAND, little silt, trace fine-med. gravel.
		5 - 7	0.0	8, 11, 12, 7 (1.6')	Brown fine-med. SAND, some silt, wet.
		10 - 12	0.0	2, 2, 3, 2 (1.3')	Brown fine-med. SAND, trace coarse sand & silt, saturated.

LEGEND

- CEMENT GROUT
- NATIVE BACKFILL
- BENTONITE SEAL
- SAND PACK
- WELL SCREEN
- RISER PIPE
- HS HEAD SPACE
- WATER LEVEL (APPROX)

GRANULAR SOILS	
BLOWS/FT	DENSITY
0–4	V.LOOSE
4–10	LOOSE
10–30	M.DENSE
30–50	DENSE
>50	V.DENSE

COHESIVE SOILS	
BLOWS/FT	DENSITY
<2	V.SOFT
2–4	SOFT
4–8	M.STIFF
8–15	STIFF
15–30	V.STIFF
>30	HARD

PROPORTIONS USED	
TRACE	0–10%
LITTLE	10–20%
SOME	20–35%
AND	35–50%

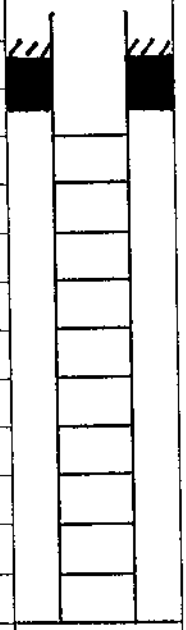
NOTES:

cas:\project\94-123\mw3.skd

TWIN STATE ENVIRONMENTAL CORP.

MONITORING WELL/SOIL BORING LOG

WELL/BORING NO.: MW-4	DEPTH OF WELL: 13 ft DEPTH OF BORING: 13 ft
PROJECT NAME: Essex Shopping Plaza	DEPTH TO WATER: 6.50 ft
PROJECT NO.: 94-123	SCREEN DIA.: 2 in. DEPTH: 13 - 3 ft
INSTALL DATE: 1/3/95	SCREEN TYPE/SIZE: Sched. 40 PVC, 0.010 in. mach. slot
TSEC REP.: mcd	RISER TYPE: Sched 40 PVC
DRILLING CO.: Tri-State Drilling	RISER DIA.: 2 in. DEPTH: 3 to 0.5 ft
DRILLING METHOD: Hollow Stem Augers	GUARD TYPE: Aluminum Flush-mount Curb Box
SAMPLING METHOD: Split spoon	RISER CAP: Expansion Plug

DEPTH IN FEET	WELL PROFILE	SAMPLE DEPTH (FT)	PID (PPMV)	BLOWS/6" AND RECOVERY	SOIL DESCRIPTION AND NOTES
1–13		0 - 5	0.0	From Cuttings	0 - 0.3' ASPHALT 0.3 - 5' Brown fine-med. SAND, little silt, trace fine-med. gravel.
		5 - 7	0.0	3, 7, 7, 6 (1.5')	Gray/Brown fine SAND, little silt, brown med-coarse sand lense at 6.5', wet, saturated at 6.5'.
		10 - 12	0.0	1, 2, 4, 5 (1.5')	Brown fine-med. SAND, saturated.

LEGEND

- CEMENT GROUT
- NATIVE BACKFILL
- BENTONITE SEAL
- SAND PACK
- WELL SCREEN
- RISER PIPE
- HS HEAD SPACE
- WATER LEVEL (APPROX)

GRANULAR SOILS	
BLOWS/FT	DENSITY
0–4	V.LOOSE
4–10	LOOSE
10–30	M.DENSE
30–50	DENSE
>50	V.DENSE

COHESIVE SOILS	
BLOWS/FT	DENSITY
<2	V.SOFT
2–4	SOFT
4–8	M.STIFF
8–15	STIFF
15–30	V.STIFF
>30	HARD

PROPORTIONS USED	
TRACE	0–10%
LITTLE	10–20%
SOME	20–35%
AND	35–50%

NOTES:

cas:\project\94-123\mw4.skd

ATTACHMENT 2

LABORATORY REPORT

ChemServe
ENVIRONMENTAL ANALYSTS

317 Elm Street
Milford, N.H. 03055
(603) 673-5440
FAX (603) 673-0366

January 26, 1995

JAN 30 RECD

Ms. Maria Dunn
Twin State Environmental
P O Box 719
Richmond VT 05477

Job Name	:	**Essex Shopping Plaza**	**Laboratory #**	:	**A12-95-06**
Job #	:	**94-123.03**	**Purchase Order #**	:	**N/A**
Location	:	**Essex Jct, VT**	**Control #**	:	**11663**

Dear Ms. Dunn,

Enclosed please find the laboratory results for the above referenced samples which were received by the Chemserve sample custodian, under chain of custody control number 11663 on January 12, 1995. Samples were collected by Maria Dunn on January 11, 1995. Any abnormalities to the samples would be noted on the enclosed chain of custody document or laboratory report form. Chemserve follows protocols for analysis corresponding to the methods referenced unless a modification is noted. Unless otherwise stated, all holding times, preservation techniques and container types are analogous with those outlined by the U.S. EPA.

A formal quality assurance/quality control QA/QC program is maintained and updated by Chemserve on a routine basis. This QA/QC manual is available upon request.

This report is not valid without a completed Chemserve chain of custody with the corresponding control number, attached.

If you have questions or concerns regarding this analysis, please feel free to contact me.

Sincerely,

Jay W. Chrystal
President/Laboratory Director

Enclosures

ChemServe
ENVIRONMENTAL ANALYSTS

VOLATILE ORGANIC ANALYSIS
EPA METHOD 8020

CUSTOMER: TWIN STATE ENVIRONMENTAL CORP.

LAB#: A12-95-06

SAMPLE LOCATION: ESSEX SHOPPING PLAZA ESSEX JCT, VT

JOB#: 94-123.03

SAMPLE IDENTITY: MW-2

CONTROL#: 11663

DATE SAMPLED: 1/11/95

DATE REC'D: 1/12/95

DATE ANALYZED: 1/24/95

MATRIX: LIQUID

PERCENT MOISTURE: N/A

COMPOUND	CONCENTRATION (UG/L)	DETECTION LIMIT MULTIPLIER: (UG/L) X 1
BENZENE	BDL	1
METHYL-TERTIARY-BUTYL ETHER	BDL	1
TOLUENE	BDL	1
ETHYLBENZENE	BDL	1
TOTAL XYLENES	BDL	1

BDL = BELOW DETECTION LIMIT

CERTIFIED BY: _____

ChemServe
ENVIRONMENTAL ANALYSTS

TOTAL PETROLEUM HYDROCARBONS
EPA MODIFIED METHOD 8100

CUSTOMER: TWIN STATE ENVIRONMENTAL CORP.

LAB#: A12-95-06

SAMPLE LOCATION: ESSEX SHOPPING PLAZA ESSEX JCT, VT

JOB#: 94-123.03

SAMPLE IDENTITY: MW-2

CONTROL#: 11663

DATE SAMPLED: 1/11/95

DATE REC'D: 1/12/95

DATE ANALYZED: 1/16/95

DATE EXTRACTED: 1/13/95

MATRIX: LIQUID

PERCENT MOISTURE: N/A

COMPOUND	CONCENTRATION (MG/L)	DETECTION LIMIT MULTIPLIER: (MG/L) X 1
TOTAL PETROLEUM HYDROCARBONS AS FUEL OIL CONSTITUENTS	1	0.1

BDL = BELOW DETECTION LIMIT

CERTIFIED BY: _____

ChemServe ENVIRONMENTAL ANALYSIS

VOLATILE ORGANIC ANALYSIS
EPA METHOD 8020

CUSTOMER: TWIN STATE ENVIRONMENTAL CORP.

LAB#: A12-95-06

SAMPLE LOCATION: ESSEX SHOPPING PLAZA ESSEX JCT, VT

JOB#: 94-123.03

SAMPLE IDENTITY: MW-3

CONTROL#: 11663

DATE SAMPLED: 1/11/95

DATE REC'D: 1/12/95

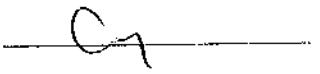
DATE ANALYZED: 1/24/95

MATRIX: LIQUID

PERCENT MOISTURE: N/A

COMPOUND	CONCENTRATION (UG/L)	DETECTION LIMIT MULTIPLIER: (UG/L) X 1
BENZENE	BDL	1
METHYL-TERTIARY-BUTYL ETHER	BDL	1
TOLUENE	BDL	1
ETHYLBENZENE	BDL	1
TOTAL XYLENES	BDL	1

BDL=BELOW DETECTION LIMIT

CERTIFIED BY: 

ChemServe ENVIRONMENTAL ANALYSTS

TOTAL PETROLEUM HYDROCARBONS
EPA MODIFIED METHOD 8100

CUSTOMER: TWIN STATE ENVIRONMENTAL CORP.

LAB#: A12-95-06

SAMPLE LOCATION: ESSEX SHOPPING PLAZA ESSEX JCT, VT

JOB#: 94-123.03

SAMPLE IDENTITY: MW-3

CONTROL#: 11663

DATE SAMPLED: 1/11/95

DATE REC'D: 1/12/95

DATE ANALYZED: 1/16/95

DATE EXTRACTED: 1/13/95

MATRIX: LIQUID

PERCENT MOISTURE: N/A

COMPOUND	CONCENTRATION (MG/L)	DETECTION LIMIT MULTIPLIER: (MG/L) X 1
TOTAL PETROLEUM HYDROCARBONS AS FUEL OIL CONSTITUENTS	BDL	0.1

BDL=BELOW DETECTION LIMIT

CERTIFIED BY: _____

ChemServe
ENVIRONMENTAL ANALYSIS

VOLATILE ORGANIC ANALYSIS
EPA METHOD 8020

CUSTOMER: TWIN STATE ENVIRONMENTAL CORP.

LAB#: A12-95-06

SAMPLE LOCATION: ESSEX SHOPPING PLAZA ESSEX JCT, VT

JOB#: 94-123.03

SAMPLE IDENTITY: MW-4

CONTROL#: 11663

DATE SAMPLED: 1/11/95

DATE REC'D: 1/12/95

DATE ANALYZED: 1/24/95

MATRIX: LIQUID

PERCENT MOISTURE: N/A

COMPOUND	CONCENTRATION (UG/L)	DETECTION LIMIT MULTIPLIER: (UG/L) X 1
BENZENE	BDL	1
METHYL-TERTIARY-BUTYL ETHER	BDL	1
TOLUENE	BDL	1
ETHYLBENZENE	BDL	1
TOTAL XYLENES	BDL	1

BDL=BELOW DETECTION LIMIT

CERTIFIED BY: _____

ChemServe
ENVIRONMENTAL ANALYSIS

TOTAL PETROLEUM HYDROCARBONS
EPA MODIFIED METHOD 8100

CUSTOMER: TWIN STATE ENVIRONMENTAL CORP.

LAB#: A12-95-06

SAMPLE LOCATION: ESSEX SHOPPING PLAZA ESSEX JCT, VT

JOB#: 94-123.03

SAMPLE IDENTITY: MW-4

CONTROL#: 11663

DATE SAMPLED: 1/11/95

DATE REC'D: 1/12/95

DATE ANALYZED: 1/16/95

DATE EXTRACTED: 1/13/95

MATRIX: LIQUID

PERCENT MOISTURE: N/A

COMPOUND	CONCENTRATION (MG/L)	DETECTION LIMIT MULTIPLIER: (MG/L) X 1
TOTAL PETROLEUM HYDROCARBONS AS FUEL OIL CONSTITUENTS	BDL	0.1

BDL=BELOW DETECTION LIMIT

CERTIFIED BY: _____

ChemServe
ENVIRONMENTAL ANALYSTS

VOLATILE ORGANIC ANALYSIS
EPA METHOD 8020

CUSTOMER: TWIN STATE ENVIRONMENTAL CORP.

LAB#: A12-95-06

SAMPLE LOCATION: ESSEX SHOPPING PLAZA ESSEX JCT, VT

JOB#: 94-123.03

SAMPLE IDENTITY: MW-4D

CONTROL#: 11663

DATE SAMPLED: 1/11/95

DATE REC'D: 1/12/95

DATE ANALYZED: 1/24/95

MATRIX: LIQUID

PERCENT MOISTURE: N/A

COMPOUND	CONCENTRATION (UG/L)	DETECTION LIMIT MULTIPLIER: (UG/L) X 1
BENZENE	BDL	1
METHYL-TERTIARY-BUTYL ETHER	BDL	1
TOLUENE	BDL	1
ETHYLBENZENE	BDL	1
TOTAL XYLENES	BDL	1

BDL = BELOW DETECTION LIMIT

CERTIFIED BY: _____

ChemServe
ENVIRONMENTAL ANALYSTS

TOTAL PETROLEUM HYDROCARBONS
EPA MODIFIED METHOD 8100

CUSTOMER: TWIN STATE ENVIRONMENTAL CORP.

LAB#: A12-95-06

SAMPLE LOCATION: ESSEX SHOPPING PLAZA ESSEX JCT, VT

JOB#: 94-123.03

SAMPLE IDENTITY: MW-4D

CONTROL#: 11663

DATE SAMPLED: 1/11/95

DATE REC'D: 1/12/95

DATE ANALYZED: 1/16/95

DATE EXTRACTED: 1/13/95

MATRIX: LIQUID

PERCENT MOISTURE: N/A

COMPOUND	CONCENTRATION (MG/L)	DETECTION LIMIT MULTIPLIER: (MG/L) X 1
TOTAL PETROLEUM HYDROCARBONS AS FUEL OIL CONSTITUENTS	BDL	0.1

BDL=BELOW DETECTION LIMIT

CERTIFIED BY: _____

ChemServe
ENVIRONMENTAL ANALYSTS

VOLATILE ORGANIC ANALYSIS
EPA METHOD 8020

CUSTOMER: TWIN STATE ENVIRONMENTAL CORP.

LAB#: A12-95-06

SAMPLE LOCATION: ESSEX SHOPPING PLAZA ESSEX JCT, VT

JOB#: 94-123.03

SAMPLE IDENTITY: TB

CONTROL#: 11663

DATE SAMPLED: 1/11/95

DATE REC'D: 1/12/95

DATE ANALYZED: 1/24/95

MATRIX: LIQUID

PERCENT MOISTURE: N/A

COMPOUND	CONCENTRATION (UG/L)	DETECTION LIMIT MULTIPLIER: (UG/L) X 1
BENZENE	BDL	1
METHYL-TERTIARY-BUTYL ETHER	BDL	1
TOLUENE	BDL	1
ETHYLBENZENE	BDL	1
TOTAL XYLENES	BDL	1

BDL = BELOW DETECTION LIMIT

CERTIFIED BY: _____

ChemServe
ENVIRONMENTAL ANALYSTS

Quality Control Data

Chain of Custody Record

Certification

ChemServe
ENVIRONMENTAL ANALYSTS

SPIKE RECOVERY FORM
EPA METHOD 8020

CUSTOMER: TWIN STATE ENVIRONMENTAL CORP.

LAB#: A12-95-06

SAMPLE LOCATION: ESSEX SHOPPING PLAZA ESSEX JCT, VT

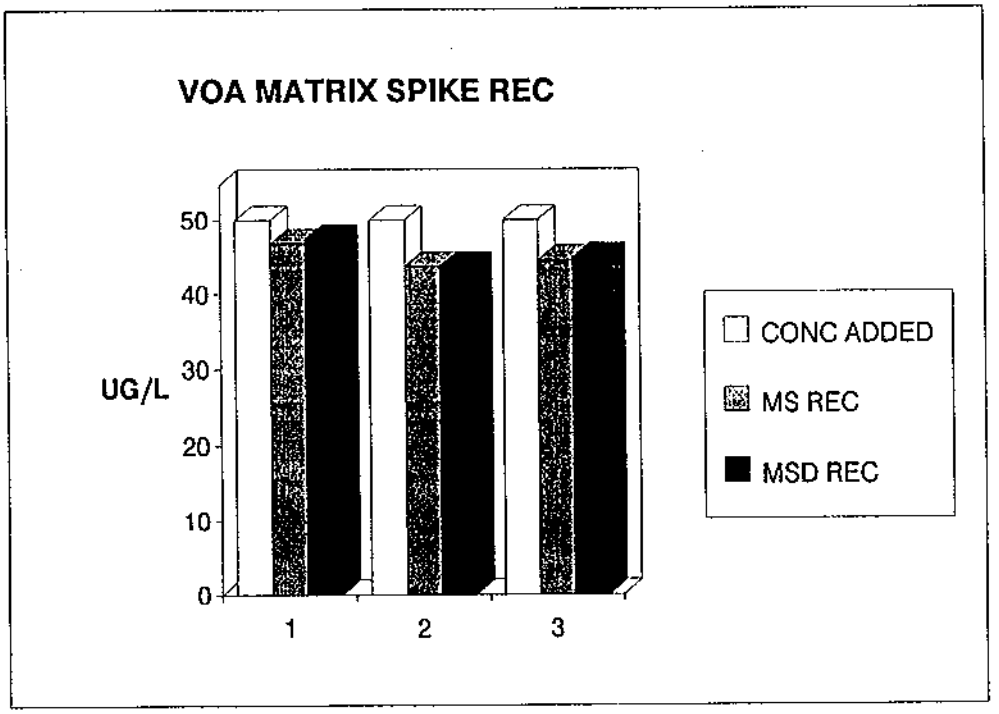
JOB#: 94-123.03

SAMPLE IDENTITY: QC SPIKES / 11663

CONTROL#: 11663

DATE ANALYZED: 1/24/95

COMPOUND	CONC ADDED	AMT REC	DUP AMT REC	%REC	DUP % REC	%DIFF
	UG/L	UG/L	UG/L			
BENZENE	50	46.82	47.52	94%	95%	1%
TOLUENE	50	43.68	43.67	87%	87%	0%
CHLOROBENZENE	50	44.52	44.94	89%	90%	1%



CONTROL LIMITS +,- 25%

A15-95-06 1/24/95

CONTROL NO. 11663

ChemServe ENVIRONMENTAL ANALYSTS

317 Elm Street
Milford, NH 03055
(603) 673-5440
FAX (603) 673-0366

CHAIN OF CUSTODY

(A) CUSTOMER INFORMATION

CUSTOMER: TSEC

ADDRESS: PUB 719 RICHMOND VT

TELEPHONE: 802 434 3350

CONTACT PERSON: MARIA DUNN

P.O. NUMBER: —

(B) PROJECT INFORMATION

JOB NAME: ESSEX SHOPPING PLAZA

JOB NUMBER: 94-123.03

LOCATION: ESSEX JCT VT

TELEPHONE: —

CONTACT PERSON: (PRINT) —

(C) SAMPLE INFORMATION

TURNAROUND TIME: (CIRCLE ONE)

(STANDARD) RUSH

RUSH T.A.T. _____ (Check with lab)

(D) STATION #	(E) SAMPLE IDENTIFICATION & LOCATION	(F) DATE COLLECTED	(G) TIME COLLECTED	(H) SAMPLE TYPE GRAB	(H) SAMPLE TYPE COMP	(I) MATRIX SOLID (S) LIQUID (L) COMBINED (C) HAZARD (H)	(J) # OF CONTAINERS	(K) CONTAINER & PRESERVATIVE 40 ml / HCl	(K) CONTAINER & PRESERVATIVE 1 L	(L) ANALYSIS
	MW-2	1/11/95	1245	\		L	3	\	\	8020 / 8100
	MW-3	1/11/95	1305	\		L	3	\	\	8020/8100
	MW-4	1/11/95	1325	\		L	3	\	\	8020/8100
	MW-4(D)	1/11/95	1330	\		L	3	\	\	8020/8100
	TB	1/11/95	1110	\		L	2	\	\	8020

(M) CUSTODY

(PRINT NAME) SAMPLER: MARIA C DUNN	SIGNATURE: Maria C Dunn	MILITARY DATE/TIME: 11 JAN 95 1340
RELINQUISHED: Maria C Dunn		MILITARY DATE/TIME: 11 JAN 95 1415
RECEIVED:		MILITARY DATE/TIME:
RELINQUISHED:		MILITARY DATE/TIME:
RECEIVED FOR LABORATORY:		MILITARY DATE/TIME: 1/12/95 1130

LAB USE ONLY

VT PCF

A B C D E F G H I J K L M

The State of New Hampshire
Department of Environmental Services

CERTIFICATE OF APPROVAL
Drinking Water Analysis

Issued to
Chemserve, Inc.

Located at
Elm Street, Milford, NH

Under the provisions of the Regulations in Env-C300
for the following analyses:

FULL CERTIFICATION: Total Coliform by Membrane Filtration, Fecal Coliform by Membrane Filtration, Colilert-MPN, Metals by Graphite Furnace, Metals by ICP, Mercury, Nitrate-N, Nitrite-N, Turbidity, Total Filterable Residue, Calcium, Alkalinity, Sodium, Sulfate, Total Cyanide, Trihalomethanes, Volatile Organics, Vinyl Chloride, and EDB.

PROVISIONAL CERTIFICATION: Fluoride, pH, Corrosivity, Insecticides (Compliance List), and DBCP.

CERTIFICATE NUMBER: 100894-A

DATE OF ISSUE: December 3, 1994

EXPIRATION DATE: December 2, 1995

Charles H. Hoyer
Certifying Officer

The State of New Hampshire
Department of Environmental Services

CERTIFICATE OF APPROVAL
Wastewater Analysis

Issued to
Chemserve, Inc.

Located at
Elm Street, Milford, NH

Under the provisions of the Regulations in Env-C300
for the following analyses:

FULL CERTIFICATION: Total Coliform by Membrane Filtration, Fecal Coliform by Membrane Filtration, ICP Metals, Metals by Graphite Furnace, Mercury, pH, TDS, Total Hardness, Calcium, Magnesium, Sodium, Potassium, Total Alkalinity, Chloride, Fluoride, Sulfate, Ammonia, Nitrate-N, Orthophosphate, TKN, Total Phosphorus, COD, BOD, Total Cyanide, Non-Filterable Residue, Total Phenolics, PCBs in Water, PCBs in Oil, Pesticides, and Volatile Organics.

PROVISIONAL CERTIFICATION: Oil & Grease.

CERTIFICATE NUMBER: 100894-B

DATE OF ISSUE: December 3, 1994

EXPIRATION DATE: December 2, 1995

Charles H. Hoyer
Certifying Officer

CONTROL NO. 11663

ChemServe ENVIRONMENTAL ANALYSTS

317 Elm Street
Milford, NH 03055
(603) 673-5440
FAX (603) 673-0366

CHAIN OF CUSTODY

(A) CUSTOMER INFORMATION

CUSTOMER: TSEC

ADDRESS: BOX 219 RICHMOND VT

TELEPHONE: 802 434 3350

CONTACT PERSON: MARIA DUNN

P.O. NUMBER: —

(B) PROJECT INFORMATION

JOB NAME: ESSEX JUNCTION PLANT

JOB NUMBER: 94-123.03

LOCATION: ESSEX JCT VT

TELEPHONE: —

CONTACT PERSON: (PRINT) —

(C) SAMPLE INFORMATION

TURNAROUND TIME: (CIRCLE ONE)

(STANDARD) RUSH

RUSH T.A.T. _____ (Check with lab)

(D) STATION #	(E) SAMPLE IDENTIFICATION & LOCATION	(F) DATE COLLECTED	(G) TIME COLLECTED	(H) SAMPLE TYPE GRAB	(H) SAMPLE TYPE COMP	(I) MATRIX SOLID (S) LIQUID (L) COMBINED (C) HAZARD (H)	(J) # OF CONTAINERS	(K) CONTAINER & PRESERVATIVE 40 ml / HCl	(K) CONTAINER & PRESERVATIVE 1 L	(L) ANALYSIS
	MW-2	1/11/95	1245	\		L	3	\	\	8020/8100
	MW-3	1/11/95	1305	\		L	3	\	\	8020/8100
	MW-4	1/11/95	1325	\		L	3	\	\	8020/8100
	MW-4(D)	1/11/95	1335	\		L	3	\	\	8020/8100
	TB	1/11/95	1110	\		L	2	\	\	8020

(M) CUSTODY

(PRINT NAME) SAMPLER: MARIA C DUNN SIGNATURE: Maria C Dunn	MILITARY DATE/TIME:	11 JAN 95 1340
RELINQUISHED: Maria C Dunn	MILITARY DATE/TIME:	11 JAN 95 1415
RECEIVED:	MILITARY DATE/TIME:	
RELINQUISHED:	MILITARY DATE/TIME:	
RECEIVED FOR LABORATORY:	MILITARY DATE/TIME:	

LAB USE ONLY

VT PCF

A B C D E F G H I J K L M